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# Cosmological thermodynamics and deflationary gas universe

Zimdahl W., Balakin A.
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

## Abstract

We establish a general thermodynamic scheme for cosmic fluids with internal self-interactions and discuss equilibrium and non-equilibrium aspects of such systems in connection with (generalized) symmetry properties of the cosmological dynamics. As an example we construct an exactly solvable gas dynamical model of a "deflationary" transition from an initial de Sitter phase to a subsequent Friedmann-Lemaître-Robertson-Walker period. We demonstrate that this dynamics represents a manifestation of a conformal symmetry of an "optical" metric, characterized by a specific effective refraction index of the cosmic medium. ©2000 The American Physical Society.

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